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DISCOUNTED CASH FLOW (DCF) ASSESSMENT METHOD AND ITS USE IN ASSESSMENT OF A PRODUCER COMPANY

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The present day theory and practice of assessment of enterprises is characterized by the existence of many different methods of assessment. One of its reasons is that the requirements for assessing of enterprises have considerably changed during the recent years. At the same time, the advancement in the science on enterprises has led to development of new assessing concepts and methods.

Key words: *producer company, discounted cash flow, assessment method*

Metoda procjenjivanja na osnovi diskontiranog protoka gotovog novca i uporaba te metode u procjenjivanju proizvodne tvrtke. Sadašnja teorija i praksa procjenjivanja poduzeća obilježena je postojanjem više različitih metoda. Jedan od razloga što je tome tako jest da su se zahtjevi za procjenjivanjem poduzeće znatno izmijenili tijekom prošlih godina. U isto vrijeme, napredak znanosti o poduzećima doveo je do razvoja novih ideja i metoda procjenjivanja.

Ključne riječi: *proizvodna tvrtka, diskontirani protok gotovine, metoda procjenjivanja*

INTRODUCTION

The methods of discounted cash flows (DCF methods) belong to the most frequently used revenue methods. These methods are linked up with the developed capital market, frequent and transparent transactions with enterprises and sufficient quantity of reliable data.

DISCOUNTED CASH FLOW METHODS

It is characteristic for the DCF methods that the value of an enterprise is determined by discounting future cash flows. When determining the discount rate, the DCF methods lean on the models of theory of capital market and the CAPM (Capital Asset Pricing Model). As a result of enterprise assessment, the market value of the overall capital, or the market value of the own capital, named as "Shareholder Value" are determined.

The mentioned methods of assessment are supported by the following requirements [1]:

- there are no transaction costs and no segmentation of the market,
- the market subjects have homogeneous expectations,
- information is free of charge,
- the costs of own, loan and overall capital are known,
- the tax rate, costs of loan capital and the entrepreneurial risks are constant, the costs of own capital are determined by the capital structure.

Table 1. **Planned profit and loss account**
Tablica 1. **Račun planiranog dobitka i gubitka**

(in 000 €)	Year					
	2003	2004	2005	2006	2007	2008
Total operational revenues	389580	420598	452445	472181	505115	534837
costs for the goods sold personal	0	0	0	0	0	0
write-offs	41587	41987	43258	43587	45897	45798
production consumption	1000	1000	1200	1200	1000	1200
other expenses	320587	355687	368975	390478	420587	450587
	20000	15000	30000	28000	25420	27300
operational profit	3954	5337	9112	3616	9100	8652
cost interests	0	20	300	200	150	111
revenue interests	320	452	351	287	800	367
profit before taxation taxes	4274	5769	9163	3703	9750	8908
	1239	1096	1741	704	1852	1693
profit after taxation	3035	4673	7422	2999	7898	7215
income tax rate „PO" / %	29	19	19	19	19	19
profit shares for owners	911	1402	2227	900	2369	2165

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THEORETICAL FRAMEWORK OF THE DCF ENTITY MODEL

The most frequently used way of expressing the DCF methods is the Entity-Approach on the basis of Free Cash Flow. In this method, the value of an enterprise depends on the expected netto incomes that can be provided by the enterprise. However, the long term development of incomes is mostly connected with a high degree of uncertainty. The strategic analysis should reveal the development potential of the enterprise, on the basis of which it is possible to make a framework for the prediction of the future development of economic variables [2].

The strategic analysis should solve two basic groups of questions: what is the potential of the market on which the firm acts (gross domestic revenue, branch of industry in which the firm aacts, taxes, interest rates, development of prices and wages), and what is the internal potential of the assessed firm like (strong and weak sides, competition).

The financial analysis, as a part of the assessment of the firm, has two functions [3]:
- to check the financial soundness of the enterprise,
- to create the basis for the financial plan.

The results of the strategic assessment and financial analysis are the basis for the delimitation of the free cash flow.

The free cash flow can be determined according to the following scheme [3]:
1. + profit from the operation activity before taxation,
2. – income tax,
3. = profit from the operation activity after taxation,
4. + write-offs,
5. + expenses of the future time periods,
6. = preliminary cash flow from the operation activity,
7. – investment into working capital,
8. – investment for providing of investment property,
9. = free cash flow.

When calculating the value of the enterprise, first the value of the overall capital of the enterprise is determined. From the loan capital only the interest-bearing loan capital is included.

The overall value of the enterprise is determined on the basis of two-phase methods, i.e. by discounting of free cash flows valid for the first phase with calculated interest rate to the date of assessment and the continued value of the second phase. For calculating the continued value, it is possible to use e.g. the Gordon's formula [4]:

$$T = \frac{FCF_{T+1}}{i_k - g}$$

where:

T - value time of the last of the predicted period of time,
i_k - average capital costs,

Table 2. **Planned balance sheet**
Tablica 2. **Planirana bilanca**

Assets (in 000 €)	Year					
	2003	2004	2005	2006	2007	2008
Total assets	100830	104521	84429	84938	89031	85013
investment property	3530	3525	16230	11305	7200	4000
movable investment prope. and immovable investment property	3530	3525	16230	11305	7200	4000
financial investments	0	0	0	0	0	0
short-term assets	95300	99485	66875	72046	79741	78325
inventory	1300	1250	1400	1590	2000	4000
receivables	69000	75235	55475	60456	65741	61325
money (cash desk+accoun.)	25000	23000	10000	10000	12000	13000
other assets	2000	1511	1324	1587	2090	2688

Liabilities (in 000 €)	Year					
	2003	2004	2005	2006	2007	2008
Total liabilities	100830	104521	84429	84938	89031	85013
own capital	24572	13864	10675	11817	10917	12274
fixed assets	1500	1500	1500	1500	1500	1500
profit funds	3500	2900	3250	3160	3160	3080
capital funds	215	215	215	215	215	215
undistributed profit from the last accounting period	10000	6900	2800	2100	2239	2587
„HV" of the current accounting period	9357	2349	2910	4842	3803	4892
loan resources	55000	72000	56879	53443	66678	57363
reserves	0	0	0	0	0	0
long-term debts	0	0	0	0	0	0
short-term debts	55000	72000	48879	48443	63678	55363
debts towards suppliers	42175	42869	38975	41687	45621	47852
debts towards employees	526	485	684	691	1000	980
other short-term debts	768	981	852	791	816	1038
bank credits	0	0	8000	5000	3000	2000
other liabilities	21258	18675	16875	19678	11436	15376

Table 3. **Planned cash flow account**
Tablica 3. **Račun planiranog protoka gotovine**

(in 000 €)	Year					
	2003	2004	2005	2006	2007	2008
Initial state of finan. means	26142	34132	49052	5847	16939	41836
profit after taxation	9357	2349	2910	4842	3803	4892
adjust. for nomonetary opts.	0	0	0	0	0	0
write-offs	3452	2587	1100	6500	4111	2500
change of inventory	182	334	414	190	280	484
change of receivables	–11132	5851	–20024	4 981	5 415	–2900
change of short-term debts	5867	11000	–23121	–436	15235	–8315
operational cash flow	7 726	22121	–38721	16077	28844	–3339
investment expenses	–3500	–3500	–10000	–4000	–2500	–3500
investment cash flow	–3500	–3500	–10000	–4000	–2500	–3500
chane of bank credits	0	0	8000	–3000	–2000	–1000
change of own property	2333	–4708	–3189	1142	–900	1357
pay of profit sharing	1431	1007	705	873	1453	1141
financial cash flow	3764	–3701	5516	–985	–1447	1498
netto total cash flow	7990	14920	–43205	11092	24897	–5341
Final state of financ. means	34132	49052	5847	16939	41836	36495

g - assumed growth rate of free cash flow during the second phase,

FCF_{T+1} - free cash flow in the first year after the lapse of the first phase.

The value of the own capital is determined by deducting the value of interest-bearing debts to the date of assessment from the overall value of the enterprise. The result of the assessment is the determination of the market value of the own property of the company. The DCF Entity method is considered to be the basic method of assessment and greatest attention is paid to it in practice.

Table 4. **Financial analysis of the plan**
Tablica 4. **Financijska analiza plana**

Indicator	Year					
	2003	2004	2005	2006	2007	2008
immediate liquidity	0,41	0,31	0,21	0,21	0,19	0,23
current liquidity	1,55	1,37	1,34	1,45	1,22	1,37
overall liquidity	1,56	1,38	1,39	1,49	1,25	1,41
work capital	28125	33616	17900	20359	22120	17473
workcapital/short-term asse.	29,51%	33,79%	26,77%	28,26%	27,24%	22,31%
own capital share	18,42%	13,26%	12,64%	13,91%	12,26%	14,44%
long-term capital/con. assets	0,87	0,69	0,49	0,44	0,42	0,50
average time of debts paym.	48,01	43,99	38,56	38,97	39,59	38,76
credit coverage	10,72	5,22	8,58	9,99	10,19	10,02
profitability of own capital	28,16%	16,94%	27,26%	40,97%	34,84%	39,86%
profitability of overall capit.	9,27%	8,15%	8,44%	9,70%	7,27%	8,75%

THE APPLICATION OF THE ASSESSMENT METHOD DISCOUNTED CASH FLOW ENTITY IN THE PRODUCER COMPANY "HUTNÉ MONTÁŽE" SLOVAKIA, A.S.

The subject of assessment is the netto business property of the company "Hutné montáže" Slovakia a.s., in accounting defined by balance sheet to 31.12.2002. The annual financial plans which make the basis for the revenue assessment are drafted for the period of years 2003 - 2008 (2nd phase).

The assessment of the company was made on the basis of information, e.g. history of the company, property and debts of the company, potential analysis, financial analysis of account statements.

DETERMINATION OF WEIGHTED AVERAGE CAPITAL COSTS (WACC)

For the purpose of determining the calculated interest rate, the estimation of which leans on the capital market, there will be utilized the risk free interest rate increased by the risk mark-up.

The first step in the calculation of the WACC is the determination of weights of the individual capital components on the overall capital. We use the so called target capital structure. The management of the firm requires the target structure in the proportion of 25 % of own capital and 75 % of loan capital [5]. The lown capital of the company "Hutné montáže" Slovakia a.s. is represented by bank credits, leasing financing and other kinds of credits. Costs on loan capital are determined as the weighted average of costs on the medium-term bank credit and the costs on other loan resources. After recalculation, the costs on loan capital are 8,53 %. When determining the costs on own capital, the European countries use mostly ways based on estimations. So, the risks estimation is partially subjective. For determining costs on own capital, we use the method of risk charge [1]. We take into consideration the required income return of the owners at the level of 7,26 % (i.e. "IRR" of one year "ŠPP"). By the use of the risk charge method of 7,5 %, the costs on own capital are estimated to reach 14,76 %. For the tax rate d we use the value of 19 %.

Table 5. **Recalculation of free cash flow**
Tablica 5. **Preračunavanje slobodnog protoka gotovine**

Indicator	Year					
	2003	2004	2005	2006	2007	2008
operating profit before taxat.	1313	4903	8545	2877	8337	8328
tax rate	29 %	19 %	19 %	19 %	19 %	19 %
adjusted tax	381	932	1624	547	1584	1582
operating profit after taxation	932	3971	6921	2330	6753	6746
write-offs	3452	2587	1100	6500	4111	2500
adjustement on nonmonetary operations	0	0	0	0	0	0
investments into fixed assets	–3500	–3500	–10000	–4000	–2500	–3500
invest. into working capital	1324	–578	2967	–1647	–3568	–1248
free cash flow (FCF)	2208	2480	988	3183	4796	4498
non interest bearing	0,919	0,844	0,775	0,712	0,654	0,601
DFCF	2029,1	2093,1	766,0	2266,3	3 136,5	2701,2
Σ DFCF	12989,8					

After substituting in the equation [4]:

$$WACC = n_{CK} \cdot (1-d) \cdot \frac{CK}{K} + n_{VK} \cdot \frac{VK}{K}$$

we get WACC = 8,87 %.

The determined data were the basis for the delimitation of free cash flow. By counting the discounted free cash flows, we get the present value of the first phase [6].

Recalculation of the value of cash flows for the second phase of assessment

The free cash flow for the second phase will be estimated on the basis of the skeleton assumptions of the given period of time [7, 8]:

Table 6. **Recalculation of the value of own capital**
Tablica 6. **Preračunavanje vrijednosti vlastitog kapitala**

Assessment in the 1st phase	12990
discounting rate for the 2nd phase	8,87 %
growth rate for the 2nd phase	1,00 %
FCF in the first year of the 2nd phase	4543
continued value (assessment of the second phase)	57726
Present value of the second phase	34840
operating value brutto	47740
interest-bearing to the date of assessment	6820
operating value netto	40920
non operational assets to the date of assessment	0
resulting value of the own property	40920

- assumed permanent growth of free cash flow (g) of 1 % a year,
- constant prices,
- for the DCF Entity model it is necessary to determine the calculated interest rate at the level of weighted average capital costs (WACC), discounting rate (i_k) will be determined at the level of 8,7 %.
- the value of the company is determined on the basis of Gordon's formula [4]:

$$T = \frac{FCF_{T+1}}{i_k - g}$$

where FCF_{T+1} is the estimation of the free cash flow for the first year after the planned period of time.

After taking into consideration all mentioned assumptions that made out the basis for predicting, we came to this conclusion: the market value of the company was esteemed to be 40 920 €.

CONCLUSION

The choice of estimation method is equally important as the data used and interpreted in the assessment method. It can be said that the assessment by means of DCF Entity most appropriately defines the value comprehension of the company.

In different countries, various methods and concepts are used. Nevertheless, all methods have some advantages and disadvantages.

The application of individual methods can have certain limits in different areas.

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